

ABSTRACT OF THE DISCLOSURE

A charged particle beam exposure apparatus comprises a beam gun, a projection optics, a sample stage loaded with a sample wherein an image projected from the projection optics is to be formed, first marks are formed beforehand, and second marks are exposed to a charged particle beam with a first incident energy by the projection optics in the vicinity of the first marks, a detector detecting an electron signal from a region including the first and second marks, when the region is scanned with a second incident energy different from the first incident energy, a calculation circuit calculating a positional shift between the first and second marks from the detected signal, a correction circuit correcting a position of the first mark based on the calculated positional shift, and an exposure control circuit aligning a desired pattern based on the corrected position of the first mark.